



Powys Decarbonisation Strategy

Powys Public Service Board (PSB)

14th September 2020

Cover photo: Glastir Woodland Creation (Credit: Eric Porter / WTM)



Quality information

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1. Acronyms and Abbreviations

ASHP	Air Source Heat Pump
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Method
CCUS	Carbon Capture, Utilisation and Storage
CHP	Combined Heat and Power
CO ₂ e	Carbon dioxide equivalent
CITB	Construction Industry Training Board
DNO	District Network Operator
DEFRA	Department for Environment, Food & Rural Affairs
EPC	Energy Performance Certificate
EST	Energy Saving Trust
EV	Electric Vehicle
GSHP	Ground Source Heat Pump
GHG	Greenhouse Gas
HGV	Heavy Goods Vehicle
kW	Kilowatt
LPG	Liquid petroleum gas
MAWWFRS	Mid and West Wales Fire & Rescue
MWh	Megawatt Hours
NRW	Natural Resource Wales
OLEV	Office for Low Emission Vehicles
PCC	Powys County Council
PSB	Public Service Board
PV	Photovoltaic
SPG	Supplementary Planning Guidance
WG	Welsh Government

1. Introduction

Global warming is a big danger to our planet and everything that lives on it. Human activities are increasing emissions of greenhouse gases (GHGs) and driving up Earth's temperatures. Some of the possible effects of global warming are more frequent and extreme weather events (causing drought, flooding etc.), rising sea levels and widespread loss of plants and animals.

¹In Powys, the primary sources of GHG emissions are from;

- Agricultural sector (e.g. growing crops, farming animals) – In particular, rearing animals and the use of nitrogen fertilisers are key contributors
- Transportation - the use of fossil fuels (e.g. petrol and diesel) for business and personal journeys.
- Industrial processes such as manufacturing, food processing, mining and construction. Emissions are a result of on-site burning of fossil fuels for heat and power and chemical processes used in production.
- Buildings –Use of natural gas and petroleum to generate heat and domestic hot water in homes and non-domestic buildings. Electricity consumption from non-renewable sources.

The Geography of Powys

The county of Powys covers the largest land area of all local authorities in Wales. It stretches from Welshpool and beyond to the North and to the Brecon Beacons National Park in the South. Powys is connected by the A470 main trunk road. Most of Powys is made up of rural villages which are spread across a large area. A map of the county is provided in Appendix A.

What is the Powys Public Service Board (PSB)?

The Powys Public Service Board (PSB) is a statutory strategic partnership established to improve the economic, social, environmental and cultural well-being of Powys. The PSB was established in order to implement the Well-being of Future Generations (Wales) Act 2015². This key Act unique to Wales provides seven legally binding well-being goals for national government, local government, local health

¹ Our starting point for definition, scope and boundaries for GHG emissions is the approach set out in "Prosperity for All: A Low Carbon Wales", Welsh Government - March 2019

WHAT ARE GREENHOUSE GASES AND HOW DO WE REFER TO THEM?

'Greenhouse gases' (or GHG for short) are gases that trap the Sun's heat and act like a blanket around our planet, causing it to get hotter. Although GHG's naturally live in our atmosphere, human activities (like heating our homes with coal and driving diesel cars) are making more GHG's escape into our atmosphere. This causes harmful global warming and climate change.

Terminology around GHG emissions can be confusing. To be consistent we refer to these gases as carbon dioxide equivalent or CO₂e. This allows us to talk about GHGs in terms of the amount of CO₂ that would have the equivalent global warming potential (GWP).

boards and other specified public bodies. It details the ways in which the specified public bodies must work together to improve the social, cultural, environmental and economic well-being of Wales.

The statutory members which make up the Powys Public Service Board are³:

- Powys County Council
- Powys Teaching Health Board
- Mid and West Wales Fire Service
- Natural Resources Wales

Why has this Strategy been Developed?

Under the Well-being of Future Generations (Wales) Act 2015, PSBs are required to develop a well-being plan. Towards 2040, the Powys Well-Being Plan is the first plan to be published by the PSB and contains 4 Well-being Local Objectives and 12 Well-Being Steps. Step 7 of the well-being plan is:

To develop a carbon positive strategy that maximises green energy production

Although Step 7 refers to a 'Carbon Positive Strategy', the decision has been taken to rebrand this document as a 'Decarbonisation Strategy'. The agricultural sector accounts for around two-thirds of the CO₂e emissions in Powys. Whilst there is work being developed at a national level in Wales to address decarbonisation in this sector, it will likely not be effective enough to lead to a carbon positive outcome for Powys by 2040.

This document provides a strategy detailing potential 'pathways' and interventions needed to achieve both a reduction in and offset of CO₂e.

² The Act came into force April 2016

³ <https://en.powys.gov.uk/article/5796/Well-being-in-Powys>

2. Vision for a Future Powys

Vision

"A decarbonised county with innovative solutions rooted in the local economic community"

The Vision, which is aligned with the Mid Wales Energy Strategy, has unfolded from the analysis and tested with the Wellbeing Step 7 Steering Group.

Core Values

Powys's vision is guided by 5 core principles:



Drive significant CO₂e reductions across the sectors and the whole energy system to achieve a pathway towards decarbonisation.



Enabling Powys to play an important role in broader Welsh and UK decarbonisation by ensuring that adequate grid capacity and storage is available while making sure that the energy transition is compatible with the restoration of natural habitats, compatible with reforestation and takes place alongside adaptation.



Delivering additional social and economic benefits to the community: support inward investment in the region, job creation, and affordable energy. Encourage increased community and public sector ownership of energy assets, retaining more of the Powys pound in Wales.



Developing innovation to deliver economic benefits by scaling up and out, to propel the county to leadership in new technologies and business models, and to overcome challenges that are unique to the area due to its rurality.



Where possible choosing future proofed solutions: without impeding investment ensuring that solutions, infrastructure, and technologies implemented will have a long life, can integrate with future systems, and will continue to provide benefits for the duration of their lifespan.

Priority Areas

In order to achieve the core values, set out in this section, three key priorities have been set as follows:



Reduce energy demand and improve the energy efficiency of the building stock in Powys

The priority above includes new and existing homes and non-domestic buildings. The big challenge is to bring existing buildings up to the standard required to help achieve the county's vision⁴. This means things like improving insulation levels to reduce the amount of heat we need to use and using new information, equipment and technology to reduce our use of electricity.



Ensuring that energy infrastructure can support delivery of decarbonised fuel sources

The second priority relates to the changes needed to the wires that carry our electricity, the pipes that bring gas into our homes and the refuelling pumps that enable our vehicles to function. Some of the ways that we can help to deliver priority two are:

- an electricity grid that enables widespread renewable electricity generation (e.g. enabling everyone to have solar panels and connect them to the existing network) in addition to wires that just carry electricity to our homes and workplaces (distribution);
- a comprehensive electric vehicle charging network (which is already growing) and other renewable fuel delivery infrastructure (this could include outlets for green hydrogen, biodiesel (made from used cooking oil or local rapeseed), etc;
- innovate to produce 'green' hydrogen. Green hydrogen refers to when hydrogen is produced from renewable electricity and water rather than from fossil fuels such as coal and gas. In some cases, hydrogen could be injected into

WHAT IS DECARBONISATION?

Put simply, decarbonisation is the reduction of CO₂e emissions by using low carbon power sources – this means less GHGs being released into our atmosphere.

⁴ UK has ambition to retrofit all homes to EPC band C by 2035.

the existing gas pipe network, significantly reducing GHGs



Increased utilisation of land and resources for the development of further renewable and low and zero carbon energy generation

Powys has significant potential around renewable energy generation and it already has the greatest installed renewable energy in Wales⁵. In 2018, 86% of the Powys's electricity consumption was met by renewables and increasing generation of renewable energy is an important aspect of the decarbonisation strategy.

The leading form of renewable electricity in Powys, and that with the most potential for further generation is onshore wind. Other technologies such as solar PV, and anaerobic digestion will also need to play an important role if the 'Vision' is to be met.



Actively phase out petrol and diesel vehicles and replace with low carbon alternatives such as biofuels and 'green' hydrogen

The UK Government announced that fossil fuelled cars will be phased out by 2050, with electric (ELVs) becoming the future for non-heavy goods vehicles. If Powys wishes to bring decarbonisation forward to 2040, there will be a need for careful monitoring of progress in the sector and, should decarbonisation be running at an insufficient pace, there may need to introduce significant interventions in order that the vast majority of cars and motorbikes, and at least a sizeable minority of Light Goods Vehicles (LGVs) shift to electric.



Develop a coherent strategy across Wales for the decarbonisation of the agricultural sector, which builds on current initiatives at a national level

Significant reduction in emissions will be required in agriculture sector in order to achieve a significant level of decarbonisation in Powys by 2040. Additionally, whilst the agriculture and land use sectors are split in this study to align with other wider studies, there is a complex interaction between the two sectors when considering CO₂e emissions. Therefore, a coherent strategy across Wales is needed that considers these two sectors and identifies and supports mitigation actions to reduce emissions. A significant existing initiative that can be considered is the NFU Cymru net zero agriculture vision by 2040⁶.

⁵ 369MW capacity

⁶ 'Achieving net zero: farming's 2040 goal'

3. Baseline Emissions and Key Sectors

In this section, we provide an overview of each sector in more detail. Figure 1: Estimated CO₂e Emissions from All Sectors in Powys' provides baseline carbon dioxide equivalent (CO₂e) emissions relating to each one⁷.

Agriculture

This sector covers emissions from soil processing, livestock, farming waste and manure management.



The sector also includes emissions from the use of solid and liquid fuels for heating and farming machinery⁸.

It is estimated this sector accounted for 1,277 ktCO₂e emission in Powys.

WHAT IS A 'KT'

A 'kt' or kilotonne is 1,000 tonnes of CO₂e emissions.

Commercial and Industrial Buildings (including public sector)

This sector covers emissions from public sector and commercial non-domestic buildings as well as emissions from industrial processes such as manufacturing, operation of machinery and food processing. In 2017, this sector emitted 229 ktCO₂e.

Homes (Domestic Buildings)

Residential sector emissions are covered in this sector. The data includes emissions resulting from energy consumption for heating, cooking, hot water and electricity used for household appliances. It is estimated that this sector emitted 259 ktCO₂e in 2017 in Powys.



Transport

This sector covers transport emissions within Powys including emissions from fuel consumption of cars, lorries, buses and motorcycles. 336 ktCO₂e was emitted from this sector in Powys in 2017. It should be noted that this figure excludes the emissions from

rail, however the extra emissions would form less than 1% of the total.

Land Use, Land Use Change and Forestry (LULUCF)

The Land Use, Land Use Change and Forestry (LULUCF) sector. The sector covers sinks (absorbs more CO₂e than it releases) and sources of emissions within the forest land sub sector. Forest land provides the largest CO₂e sink but on the other hand cropland emits the largest amount of emissions. In 2017, this sector provided a net emission of -71.5 ktCO₂e.



Renewable Electricity

For the purposes of this strategy, any excess renewable electricity generated in any particular year is accounted for as an offset to the annual CO₂e emissions for Powys in the same year. Excess means electricity generated over and above that consumed by buildings and industry. It should be noted this approach is used for illustrative purposes only and does not form part of any more widely accepted carbon accounting methodology.

Summary of baseline year emissions

The graph below shows the emissions from all sectors in Powys in 2017 (baseline year⁹).

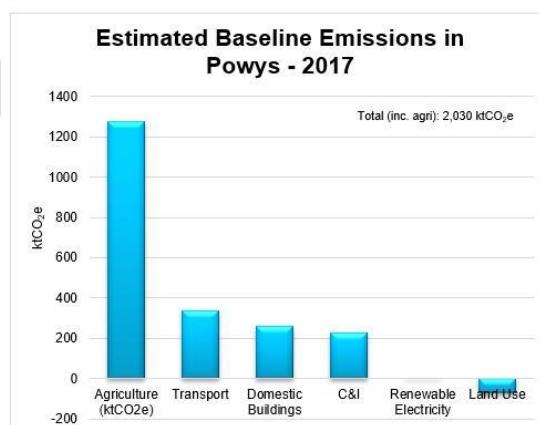


Figure 1: Estimated CO₂e Emissions from All Sectors in Powys

Emissions for the LULUCF sector in Figure 1 are shown as being negative because forest land sucks up carbon from the atmosphere, rather than releasing it. Renewables are shown in Figure 1 as zero because Powys is not yet generating electric in excess of demand (no surplus electricity).

⁷ Further detail regarding background to the sectors and emissions calculation methodology is provided in Appendix XX

⁸ The electricity and gas consumption emission in the agriculture sector cannot be disaggregated (BEIS LA

dataset) and is included in the industrial and commercial sector emission.

⁹ Baseline year is the year used as a starting point for measuring the CO₂e emissions in Powys.

4. Powys: Pathways to 2040

If Powys is to achieve its aim of drastically reducing CO₂e by 2040 then it must follow a pathway to get there. By 'pathway' we mean a series of meaningful changes which will lead to a significant reduction in CO₂e. Based on the Powys's vision for the future, here is an example of what the shift away from the current path might look like, focussing where possible on 5-year intervals:

Homes: Progress to 2040

Biofuels are fuels produced directly or indirectly from organic materials known as **biomass**. This includes plant materials and animal waste.

By 2030:

- Approximately 30% of the energy demand will be met by biofuels.
- 43% of the demand will be met by electricity

By 2035:

- Nearly 40% of the energy demand will be met by biofuels (an increase of around 10% over 5 years).
- 46% of the demand will be met by electricity.

By 2025:

- Around 20% of the energy demand will be met by biofuels (biodiesel, biogas or biomass)
- Almost 40% of the demand will be met by electricity (Heat Pumps (either air, water or ground source))

Heat pumps take heat from the air, water or ground and transfer it to somewhere else e.g. the heating / hot water system in your home. Compared to conventional gas boilers, they use less energy and are far more efficient

By 2040:

- For heating and hot water requirements, almost all households, including new homes, have been switched to renewable fuels (either heat pumps or biofuels). In this pathway, just over 5% of homes are still using electric heaters/boilers from grid electricity, however an assumption has been made that the grid will also continue to decarbonise with pace in order to meet UK targets¹⁰.
- Energy efficiency measures are maximised in both existing and new homes, therefore reducing energy demand (e.g. insulation, building fabric upgrades etc.).

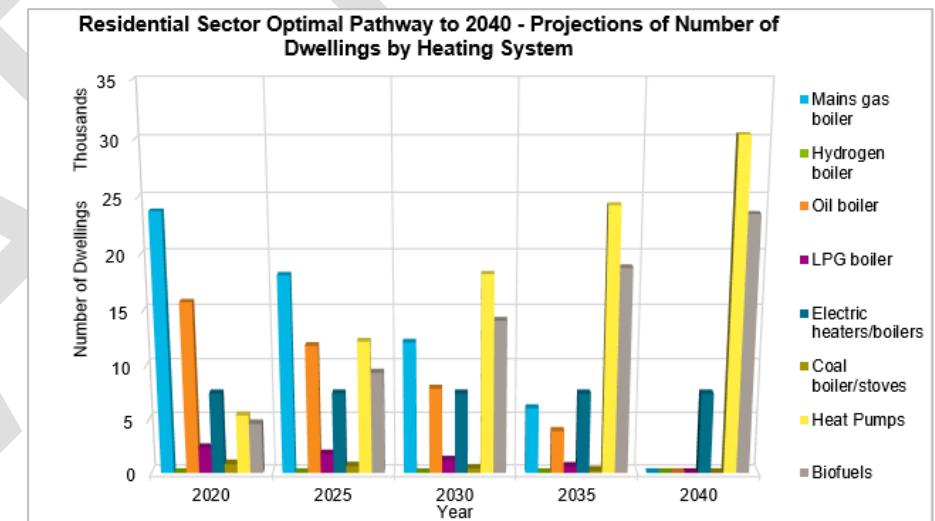


Figure 2: Heating Systems in Homes: Optimal Route to 2040

¹⁰ The central target was amended in June 2019, for emissions to reach 'net zero' by 2050 (that is, any residual emissions will need to balance with removal or offsetting measures so that emissions are zero overall).

Commercial and Industrial Buildings: Progress to 2040 (including public sector)

By 2030

- Large number of sites using natural gas or other fossil-based fuels (such as gas, coal, LPG, etc) for heating or industrial processes have been switched to renewable fuels such as biofuels or heat pumps¹¹
- Over 20% reduction in total energy usage (from 2015 baseline) was achieved, exceeding the UK Clean Growth Strategy target. Potentially achieved through improved insulation of buildings, installation of new equipment, occupant behaviour changes or more efficient use of energy in industrial processes, etc.

By 2040

- All sites using natural gas or other fossil-based fuels (such as gas, coal, LPG, etc) for heating or industrial processes have been switched to renewable fuels.

Transport: Progress to 2040

Figure 3 provides a pathway example of how the fuelling of transport in Powys might look over the next 20 years.

By 2030

- Still the predominant fuel is petrol and diesel, however the number of EV has more than doubled on present day estimates.

By 2035

- EV have far surpassed petrol and diesel vehicles (over 60% of vehicles powered by electric). Under current UK proposals, sales of new petrol and diesel vehicles has now been banned.

By 2040

- Almost all petrol and diesel vehicles are powered by non-fossil fuels such as electric and 'green' hydrogen.

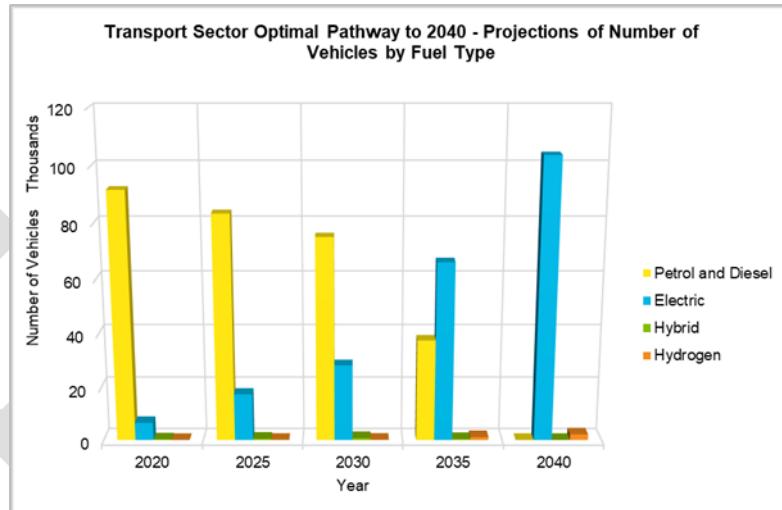


Figure 3: Transport: Shift in Vehicle Fuel Types

Renewable Electricity: Progress to 2040

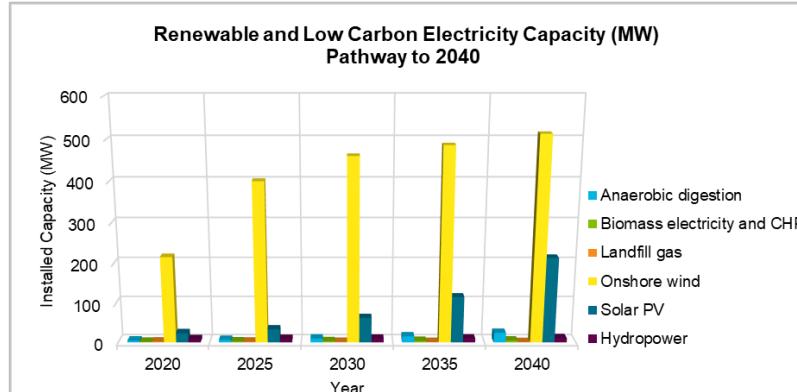


Figure 4: Renewable Electricity: Optimal Route to 2040

¹¹ Some high temperature industrial processes have been switched to direct electric

- The majority of scenarios that are considered in this study are aligned to the Mid Wales Energy Strategy vision (pathway is presented in the figure above). The data suggests that wind and solar PV will play a significant part in the decarbonisation strategy.
- Onshore wind is the predominant renewable at all 5-year interval points (see Figure 4).
- By 2030, the installed capacity of solar PV will have almost doubled and by 2040, will surpass 200 MW of installed capacity.
- Powys will be a major exporter of renewable electricity in Wales which increases the energy security of the region.
- Renewable electricity generation has increased significantly¹². The top 4 energy generation technologies are onshore wind, solar photovoltaic (PV) panels, biofuels and anaerobic digestion.

Land Use: Progress to 2040

- By 2040, the rate of deforestation (removal of trees and woodland) will have reduced significantly, whilst at the same time, the forest planting rate will have increased. This will lead to a large overall increase in trees across the county and will suck up carbon-dioxide, effectively decreasing GHG emissions. The pathway in this sector is based on the projections of emissions from this sector from Centre for Ecology and Hydrology modelling.

Agriculture: Progress to 2040

It is assumed that at this stage, this sector follows the recommended emissions reduction route by the Welsh Government in the Prosperity for All: A Low Carbon policy¹³. The policy states that carbon emissions in this sector will be reduced through a range of approaches, including:

- Improved efficiency of livestock production and improved crop production and nutrient management
- Improvements in farm fuel & energy efficiency)

Some headline figures are provided below along with a graph showing a decarbonisation pathway in line with WG policy (Figure 5).

By 2030

- The emissions from this sector have reduced by almost 20%.

By 2040

- The emissions from this sector have reduced by 26% in year 2040 from baseline levels (2017).

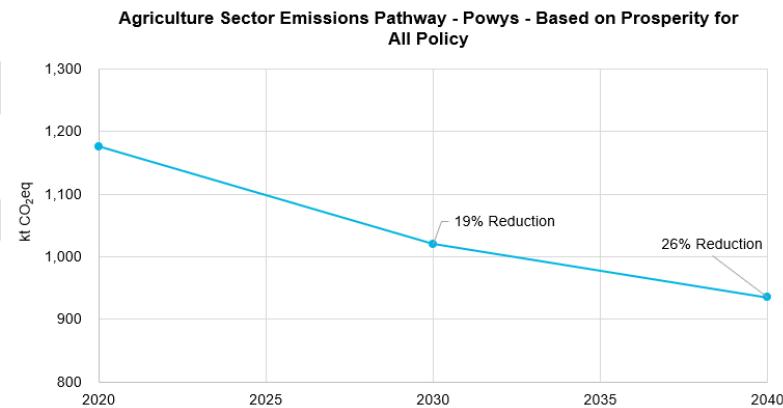


Figure 5: Agricultural Decarbonisation: Optimal Route to 2040

¹² in line with the Mid Wales Energy strategy vision target; a 215% increase in generation is assumed

¹³ https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf

5. Existing Initiatives

Throughout Powys, there is already great work being undertaken to create a shift towards the vision of the county in 2040. Some of the key projects and initiative are highlighted here and cover a wide range of the sectors covered previously in this Strategy. This strategy sets out to compliment and build upon them.

Powys County Council

BREEAM is an environmental assessment method which provides a rating based on a building's environmental, social and economic sustainability performance using standard developed by BRE.

The Council with funding from the Welsh Government is currently working on a programme of new schools delivered to BREEAM 'Excellent' standard and an EPC rating

of A.

The council has installed LED lighting on an ad-hoc basis across its building portfolio and is currently programming an investment of £540,000 in new LED lighting across the property estate.

Powys Teaching Health Board

In recognition of the pressing need for rapid decarbonisation, Powys Teaching Health Board have a draft Sustainability and Decarbonisation Framework which include practical and meaningful environmental targets. The organisations framework will be influenced by the emerging NHS in Wales decarbonisation delivery plans as well as the PSB Carbon Positive Powys.

Third Sector Initiatives

Open Newtown

Open Newtown is the trading name for Going Green for a Living Community Land Trust Ltd. The Trust has several sustainable land management projects that benefit the local community. Projects include Open Energy which investigates carbon savings methods.

Nature Friendly Community Woodlands

As part of this scheme more than 1,800 trees were planted at the far end of Vaynor fields (park land near Newtown) to promote carbon capture / mitigation, through the planting of trees on previously unimportant habitats.

Mid and West Wales Fire Service (MAWWFRS)

MAWWFRS first released their Sustainability and Environment Strategy in June 2009¹⁴. Since then they have introduced a number of measures including:

- Installed PV panels on several buildings
- Introduced hydrogen and EV in their fleet

Natural Resources Wales

NRW's goal is to become an exemplar in carbon management and share best practice for use across the Welsh public sector. Some of the ways they are already achieving that are:

- Installing LED lighting in NRW buildings
- Where viable, upgrading heating systems to renewable energy sources (e.g. biomass)
- Introducing EV and associated charging infrastructure to its fleet

Brecon Beacons National Park Initiatives

Some of the ways that the Brecon Beacons National Park is actively taking up the challenge of decarbonisation by 2040 are:

- Installation of 30kW of hydro power
- 40% of their vehicle fleet to be fully electric or plug in hybrid by the end of 2020
- 80% of their estate has been converted to LED lighting.

Dyfed Powys Police

The following are a few examples of initiatives that are being applied and progressed by the police force:

- Back to back arrangements with Estates providers to maximise carbon reduction.
- BREEAM 'Excellent' being applied to new Build Carmarthenshire Custody Project.
- Biomass - The possibility of biomass boilers has been assessed on each replacement over the last 7 years. One has been successfully installed at HQ.

¹⁴ <https://www.mawwfire.gov.uk/media/1891/5-year-environmental-strategy-2020-2025-052020.pdf>

6. Key Interventions



Direct role and responsibility for PSB and other public and third sector organisations (e.g. own buildings, fleet, landholdings)

Strong influence exerted by PSB and other public and third sector organisations (e.g. policymaking, funding programmes, etc.)

Reduced influence due to wider competing agendas at national level.

Decision making at EU / UK level, private business and homeowners

Key Interventions Table Layout

Level of Ownership

The table below provides a list of interventions appropriate to each key sector, divided by the relative degree of control of the PSB and other public and third sector bodies to deliver. Although there is a degree of overlap, the pyramid diagram to the left provides an overview of the framework adhered to in the below table. Each intervention is colour coded to relate to the pyramid.

Owner(s)

The entity or entities responsible for leading the intervention and those with key responsibilities in delivery.

Timescales

Short Term (S) – 0-5 years, Medium Term (M) – 5-10 years, Long Term (L) – 10-20 years.

The numbering of the interventions relates to the SWOT analyses which is provided for further information in the Appendices.

Sector Type	Intervention	Owner(s)	Timescales
Homes (existing)	<p>For dwellings owned and/or controlled / influenced by PSB member organisations and other public and third sector organisations, a commitment to be made to:</p> <ol style="list-style-type: none"> Fully decarbonising the provision of heating and domestic hot water by 2040. This means replacing gas, LPG or oil with heat pumps, biomass, biofuel, 100% 'green' hydrogen, or some other renewable fuel. Achieve an absolute reduction in energy (electricity, gas and other fuels used in dwellings) of 20% against 2017 levels. <p>The policy commitment should be monitored and reported through the PSB to ensure sufficient progress is made and to identify/mitigate issues as they begin to arise. A study of the number of homes where public/third sector bodies are the decision maker with respect to heating system replacements should be identified and a retrofit plan developed. The plan will need to identify the most appropriate renewable heating technology to be implemented, considering availability of the renewable energy resource, surrounding infrastructure and compatibility with the existing heating and hot water system. Home surveys would enable a robust costing to be undertaken.</p> <p>It is suggested that these policy commitments are implemented as soon as possible but no later than 2025. The timescales link with the maximum life of boiler plant [which we assume is 15years]. For instance, if a gas boiler is installed in 2026, it will still be in use beyond 2040. It is suggested that linking in with condition surveys and planned maintenance regimes is likely to be a cost-effective way to achieve the ambition. Planned maintenance regimes should be implemented as opposed to reactive – the latter will leave no time for considering appropriate technology or additional associated works such as radiator replacement and/or fabric/insulation upgrades. Heat pumps should be utilised rather than direct electric heating systems although the latter could be used in conjunction with renewable electricity generation such as wind/solar. There remains a requirement for retrofit homes to be in compliance with Approved Document L1B of Part L of the Building Regulations.</p>	Principal: Powys PSB Responsibility: PSB organisations (including, the Welsh Government), other public and third sector organisations.	S- Surveys, costing, plan and policy commitment M-L, Implementation
	<p>For existing dwellings outside of the ownership/control of public/third sector bodies, there are a number of policy interventions that could facilitate the uptake of energy efficiency and renewable heating measures as follows:</p> <ol style="list-style-type: none"> Retrofit of renewable heating systems and associated fabric improvement measures to be delivered through public/third sector grant/loan funding schemes. <p>3.1 Studies of existing dwellings (location, nature and condition of existing heating plant) and energy infrastructure could inform implementation strategies. A study should identify the number, location, condition and tenure of private sector homes in the county: this will enable quantification of the task in hand, feed into a consideration of existing/future infrastructure requirement and to understand which properties are already subject to a requirement for improved energy efficiency (potentially through Energy Performance Certificate records).</p> <p>3.2 Area based schemes (as with NEST), are likely to be most cost effective. Area-based infrastructure plans to be developed. Based on a study to identify the existing capacities in the existing network, opportunities for the gas network (where present, including for 100% 'green' hydrogen injection in the future) and other renewable resources and networks – this should enable a better understanding of the technologies that could be suitable in each area – particularly if information is known about and combined with the typical existing technology installed in the existing dwellings in each area.</p> <p>3.3 Large-scale schemes are likely to need increase in capacity in the energy retrofit supply chain and therefore education/training places.</p>	Principal: PSB/Powys County Council Responsibility: PSB organisations (including, the Welsh Government), other public and third sector organisations, education and training providers, dwelling retrofit providers (trade organisations); funding bodies.	S-Studies and infrastructure plan development, implementation plan. M-L Scheme roll-out
	<p>For all dwellings, there are levers at a national level (unlikely to be applicable just at a Powys level) that might be utilised to require / stimulate a change from fossil fuelled heating and hot water systems to renewable technologies including Building Regulations (Approved Document L1B), requirements on Landlords (and Energy Performance Certificates) and national funding programmes.</p> <ol style="list-style-type: none"> Consider using mechanisms available at a national level to require / stimulate uptake of renewable heating systems and associated energy efficiency levels in existing dwellings <p>4.1 From 1 April 2018, all rented property which is to have a new tenancy must have an EPC rating of at least 'E'. There are a number of opportunities regarding EPCs that might be considered including extending the requirement of Landlords to higher ratings.</p> <p>4.2 Changes could be investigated in relation to the Approved Document L1B.</p> <p>4.3 Consider existing national funding programmes (e.g. NEST, Warm Wales, ECO, arbed) and their alignment to work in tandem with PSB funding to target replacement of fossil fuel based heating systems to those that utilise renewables based technologies (with associated fabric and control measures): this could align with the area based infrastructure and retrofit plans to be developed by the PSB. The proposals for studies in the 'pink' section above should indicate whether current annual funding levels are sufficient to address the Powys stock or whether (and the level) of additional investment needed.</p>	Principal: Welsh Government, PSB	S- Consider utilising the available mechanisms to elicit change M-L Implementation and monitoring

	<p>Decisions elsewhere will impact upon the ability of Wales to transition its existing dwellings stock from fossil fuels to renewable energy technologies.</p> <p>5. The more certainty over the long term that can be provided in terms of the policy and funding picture in Wales, the better able the public/third sector will be able to plan to ensure zero carbon.</p> <p>Examples are:</p> <ul style="list-style-type: none"> ▪ The Energy Performance of Buildings Directive (that forms the requirement for EPCs) is a European Directive. The UK's decision to leave the EU means that the requirement for EPCs may be reviewed in the future. Will EPCs be retained? ▪ The Energy Company Obligation (ECO) is a UK Government energy efficiency scheme to help reduce carbon emissions and tackle fuel poverty. The ECO3 funding scheme is to allow certain heating system upgrades when they are delivered alongside certain insulation measures. Will ECO continue / expand? 	Principal: Welsh Government	S – Commitment to long term programmes M-L Maintain programmes
Homes (new)	<p>For new dwellings paid for / commissioned by PSB member organisations and other public and third sector organisations, consider the following policy intervention:</p> <p>6. All new homes to be zero carbon from 2020 where practicable, but 2025 at the latest.</p> <p>There are number of definitions of 'zero carbon'. It is proposed, for public and third sector owned homes, that a definition is employed whereby no additional carbon emissions are generated from at least the operation of the building – this includes emissions from fixed services (regulated emissions) and those from small power use (e.g. equipment that is plugged in by the occupant). No fossil fuels (gas, LPG, oil, direct (grid) electric, etc) should be employed for heating, but heat pumps (that are driven by electric) can be utilised where the electricity is provided by on/near site renewables (with small residual offset offsite). New homes should be built to a high standard of fabric and efficiency as a priority, to minimise the amount of energy required by the building.</p> <p>The UK Government has stated its intention no to allow gas connections to new homes by 2025. The timing of the policy intervention for new homes is considered in light of Powys's ambition to bring zero carbon forward and in tandem with the need to also retrofit existing homes. Every new home that is built utilising fossil fuels adds another home to be retrofit in the future.</p>	Principal: Powys PSB	S – Research, develop and cost the plan M-L Implementation
	<p>For new dwellings outside of the ownership/control of public/third sector bodies, there is a key policy intervention that could facilitate the uptake of energy efficiency and renewable heating measures via planning policy.</p> <p>7. Planning policy prevents the use of fossil fuels and direct electric for heating new homes.</p> <p>7.1 Prior to policy development/introduction of policy, PCC should build upon their Renewable Energy Assessment (REA) to identify the nature and location of planned new development and conduct further studies to identify the most likely and cost effective renewable heating technology, depending upon the type/number of buildings, the renewable energy resource and the existing/planned infrastructure. The findings may impact upon development viability and mitigation may be needed.</p> <p>7.2 The evidence base in support of policy should consider how the location of new development may disproportionately impact upon development in some areas of the county more than others.</p> <p>7.3 PCC to work with the DNO to identify areas of new development (new buildings and new renewable generation sites) to correctly target investment in the electricity network (given that significant uptake of heat pumps is likely to result from the requirement for zero carbon).</p> <p>7.4 Set targets via the Local Development Plan (SPG) for all new development in Powys. Ensure targets are also in compliance with Building Regulations, Approved Document L1A.</p>	Principal: Powys County Council	S- develop the supporting evidence base and introduce the policy. M-L Implementation and monitoring of the policy
	<p>For new dwellings outside of the ownership/control of public/third sector bodies, there are mechanisms available at a national level to secure new low energy, zero carbon homes including the Building Regulations and National Planning Policy.</p> <p>8. Consider the mechanism and timetable at a national level for introducing the requirement for zero carbon new homes and for preventing the use of fossil fuels for heating new homes.</p>	Principal: The Welsh Government	S – research the options M-L Implementation of requirement for zero carbon new homes
	<p>Decisions elsewhere will impact upon the ability of Wales to transition to the requirement for new homes to be zero carbon.</p> <p>9. Consider the impact of Powys unilaterally requiring zero carbon / non-fossil fuelled homes.</p> <p>Development in Powys is a tiny fraction of the total homes built in Wales and the UK and viability will need to be considered. Developers / housebuilders will take different views on enhanced standards in Powys. A more detailed study on the potential impacts of the potential policy is required.</p>	Principal: The Welsh Government Responsibility: Developers, PCC.	S – Clarify programme for the introduction of zero carbon homes M-L – Implementation of programme
	<p>For non-domestic buildings (offices, schools, depots, etc) owned and/or controlled / influenced by PSB member organisations and other public and third sector organisations, policy interventions are:</p> <p>10. By 2040, complete decarbonisation of heating and domestic hot water and an absolute reduction in energy demand (including all fuels) of 20% against 2017 levels in all non-domestic buildings.</p> <p>10.1 This means replacing fossil fuels (e.g. gas, LPG or oil with heat pumps, biomass, biofuel, 100% 'green' hydrogen, or some other renewable fuel).</p> <p>10.2 The policy commitment should be monitored and reported through the PSB to ensure sufficient progress is made and to identify/mitigate issues as they begin to arise. All public sector organisations will need to understand/identify the opportunities for cost effective retrofit including building rationalisation, fabric upgrades, replacement of plant and distribution systems, civils works. A study of the number of the number of non-domestic buildings where public/third sector bodies are the decision maker with respect to heating system replacements should be identified and a retrofit plan developed. The plan will need to identify the most appropriate renewable heating technology to be implemented, considering availability of the renewable energy resource, surrounding infrastructure and compatibility with the existing heating and hot water system. Surveys of each of the buildings would enable a robust costing to be undertaken.</p> <p>10.3 The policy commitment is to be in place as soon as possible but no later than 2025. The timescales link with the maximum life of boiler plant [which we assume is 15years]. For instance, if a gas boiler is installed in 2026, it will still be in use beyond 2040. It is suggested that linking in with condition surveys and planned maintenance regimes is likely to be the most cost-effective way to achieve the ambition. Planned maintenance regimes should be implemented as opposed to reactive – the latter will leave no time for considering appropriate technology or additional associated works such as radiator replacement and/or fabric/insulation upgrades.</p> <p>10.4 There remains a requirement to be in compliance with Approved Document L2B of Part L of the Building Regulations.</p>	Principal: Powys PSB Responsibility: PSB organisations (including, the Welsh Government), other public and third sector organisations, funding bodies.	S- Surveys, costing, plan and policy commitment M-L, Implementation
Commercial & Industrial Buildings (existing)	<p>For existing non-domestic buildings outside of the ownership/control of public/third sector bodies, there are a number of policy interventions that could facilitate the uptake of energy efficiency and renewable heating measures as follows:</p> <p>11. Develop and implement a business support programme to facilitate the transition of private sector businesses to the use of renewable heating technologies and non-fossil fuels for industrial process.</p>	Principal: PSB Responsibility: PSB organisations (including, the	S – Development of the programme

	<p>11.1 As the public and third sector decarbonise their own non-domestic buildings, there may be cost effective opportunities to work together with the private sector to assist the latter in achieving the same goal. This should be one of the key considerations when developing the local area infrastructure and retrofit plans. Such opportunities might include sharing the costs of electricity grid upgrades, developing decentralised energy networks, establishing frameworks to enable reduced costs and risks of procuring the supply chain, etc. Such a support scheme will need to be researched and funded.</p> <p>11.2 A study should identify the number, location, condition and tenure of private sector businesses in the county: this will enable quantification of the task in hand, feed into a consideration of existing/future infrastructure requirement and to understand which properties are already subject to a requirement for improved energy efficiency / carbon reduction schemes.</p> <p>11.3 Area-based infrastructure plans to be developed. Based on a study to identify the existing capacities in the existing network, opportunities for the gas network (where present, including for 100% 'green' hydrogen injection in the future) and other renewable resources and networks – this should enable a better understanding of the technologies that could be suitable in each area – particularly if information is known about and combined with the typical existing technology installed in the existing buildings in each area.</p> <p>12.4 Whilst potentially not exclusive, any support programme should seek to prioritise the decarbonisation of heat and energy for industrial process use. This includes potential changes of fuel, technology, controls, fabric, distribution system and equipment. More detailed work may be required with industrial energy users to better understand their processes, requirements and costs. There may be funding programmes available for the decarbonisation of industrial processes.</p> <p>For all existing non-domestic buildings, there are levers at a national level (unlikely to be applicable just at a Powys level) that might be considered to require / stimulate a change from fossil fuelled heating and hot water systems to renewable technologies.</p> <p>12. Consider using mechanisms available at a national level to require / stimulate uptake of renewable heating systems and zero carbon fuels for industrial processes in existing industrial and commercial buildings.</p> <p>12.1 From 1 April 2018, all rented property which is to have a new tenancy must have an EPC rating of at least 'E'. Extending the requirement could be considered,</p> <p>12.2 Changes could be investigated in relation to the Approved Document L2B requiring that no new fossil fuel heating systems are installed.</p> <p>12.3 Consider existing national funding programmes (e.g. city deals, business clusters, etc) and their alignment to work in tandem with PSB funding to target replacement of fossil fuel-based heating systems and industrial processes. Funding programmes should be aligned with area-based infrastructure and retrofit plans to be developed by the PSB. The studies detailed in the 'pink' section above should indicate whether current annual funding levels are sufficient to address the Powys non-domestic building stock or whether (and the level) of additional investment needed.</p> <p>Decisions elsewhere will impact upon the ability of Powys to transition its existing commercial buildings stock and industrial processes from fossil fuels to renewable energy technologies.</p> <p>13. Clarify and consider the policy and funding picture in Wales to inform the public/third sector approach to transitioning existing commercial buildings stock and industrial processes from fossil fuels to renewable energy technologies.</p> <p>There is little energy intensive industry in Powys but a significant number of non-domestic buildings.</p> <p>A more detailed study to give greater clarity in terms of the support available for the retrofit of non-domestic buildings would be helpful including, for example:</p> <ul style="list-style-type: none"> ▪ Funding/support - what is available to businesses for energy retrofit in Wales; ▪ Policy/regulatory drivers – there is no national strategy. What is the Wales strategy/timetable for retrofitting renewable heat in non-domestic buildings and how will this be achieved 	Welsh Government), other public and third sector organisations, funding bodies. retrofit supply chain, DNO & utilities, private sector businesses.	M-L Programme implementation
	<p>For new non-domestic buildings paid for / commissioned by PSB member organisations and other public and third sector organisations, the potential policy intervention is:</p> <p>14. All new non-domestic buildings to be zero carbon from 2020 where practicable, but 2025 at the latest.</p> <p>14.1 There are number of definitions of 'zero carbon'. It is proposed, for public and third sector buildings, that a definition is employed whereby no additional carbon emissions are generated from at least the operation of the building – this includes emissions from fixed services (regulated emissions) and those from small power use (e.g. equipment that is plugged in by the building occupants). No fossil fuels (gas, LPG, oil, direct (grid) electric, etc) should be employed for heating, but heat pumps (that are driven by electric) can be utilised where the electricity is provided by on/near site renewables (with small residual offset offsite). New C&I buildings should be built to a high standard of fabric and efficiency as a priority, to minimise the amount of energy required in operating the building.</p> <p>14.2 The timing of the policy intervention for new C&I buildings is considered in tandem with the need to retrofit existing non-domestic buildings. Every new building that is built utilising fossil fuels adds another to be retrofit in the future.</p> <p>14.3 It is not envisaged that public or third sector buildings will involve industrial processes.</p> <p>14.4 The PSB should ensure that where public/third sector development is planned, that the opportunity maximises upgrades to infrastructure, supports renewable energy supply networks and seeks to identify and link with surrounding buildings to enable a wider transition to renewable heat, including links to dwellings.</p>	Principal: PSB Responsibility: PSB member organisations (including the Welsh Government), other public and third sector organisations, DNO and utility providers, private sector businesses, construction industry and renewable energy supply chain	S- Research, develop and adopt the policy M-L – Implementation of the policy
Sector Type	<p>For new commercial and industrial buildings outside of the ownership/control of public/third sector bodies, there is a key policy intervention that could facilitate the uptake of energy efficiency and renewable heating measures via planning policy.</p> <p>15. Planning policy that prevents the use of fossil fuels and direct electric for heating new non-domestic buildings or for new industrial processes.</p> <p>15.1 A wider package of measures is likely to be required, including information, education and training, capacity building in the supply chain, funding, development of compliance and monitoring measures, etc.</p> <p>15.2 Prior to policy development/introduction, PCC should build upon their Renewable Energy Assessment (REA) to identify the nature and location of planned new development and conduct further studies to identify the most likely and cost effective renewable heating technology, depending upon the type/number of buildings, the renewable energy resource and the existing/planned infrastructure;</p> <p>15.3 For classes of use relating to development for industrial processes, more specialist energy uses will require dialogue between the planning authority and developer to understand the renewable energy options;</p> <p>15.4 PCC to work with the DNO to identify areas of new development (new buildings and new renewable generation sites) to correctly target investment in the electricity network (given that significant uptake of heat pumps is likely to result from the requirement for zero carbon).</p> <p>15.5 Set targets via the Local Development Plan (SPG) for all new development in Powys. Ensure targets are in compliance with Building Regulations, Approved Document L2A.</p>	Principal: PSB Responsibility: The Welsh Government; PSB member organisations; other public and third sector; DNOs and utility providers; Industrial energy users and trade bodies; renewable energy providers.	S – Undertake the necessary research to inform the policy M-L Implement the policy.

	<p>For new non-domestic buildings and industrial processes outside of the ownership/control of public/third sector bodies, mechanisms at a national level to secure new low energy, zero carbon Buildings and processes should be clarified and considered.</p> <p>16. Consider the national mechanisms and timetable for introducing requirements for low/zero carbon new non-domestic buildings and industrial processes.</p> <p>16.1 Building Regulations Approved Document L2A sets out the building energy performance requirements in respect of new non-domestic buildings (but not energy used in industrial processes);</p> <p>16.2 National planning policy currently sets out sustainable design requirements for new development, but not specific energy performance standards.</p> <p>Decisions elsewhere will impact upon the ability of Powys to require new commercial buildings and industrial processes from fossil fuels to renewable energy technologies.</p> <p>17. Clarify and consider the UK policy and funding picture to inform the policy approach to requiring zero carbon new commercial buildings and industrial processes.</p> <p>17.1 Currently there is little energy intensive industry in Powys but policy should not prevent any potential inward investment. Consideration of the nature of planned / desired industrial development would inform the nature of the renewable technologies and fuels that would be employed and therefore the capacity building / support available better identified.</p> <p>17.2 Proposals for Building Regulations in the UK as well as Wales will impact upon planning policy decisions in Powys.</p>	Principal: The Welsh Government, PSB,	S – Understand plans and Integrate findings with PSB Strategy
	<p>18. Introduce policies to reduce the need for employees, tenants and contractors to travel but, where transport is necessary, to ensure the use of ELVs and/or vehicles utilising other renewable fuels. Secure on-site access to charging and refuelling infrastructure.</p> <p>18.1 Measures to provide vehicle charging infrastructure at non-domestic buildings should not replace efforts to encourage modal change in journeys. Within 12 months, introduce into benefit, business allowance and compensation schemes, procurement criteria and other mechanisms, policies to:</p> <ul style="list-style-type: none"> • Increase incentives for walking and cycling • Reduce the number of vehicle miles travelled and emissions from own employees as well as those of contractors, as well as promoting uptake of ELVs; <p>18.2 For dwellings and non-domestic buildings owned and/or controlled / influenced by PSB member organisations and other public and third sector organisations, access to on-site electric vehicle (ELV) charging (and/or some other renewable fuel storage and refuelling infrastructure where different fleet vehicles require) to be made available on or very near site by 2025.</p> <p>18.3 The life expectancy of a vehicle is 8-15years. To ensure opportunities to change to an ELV are maximised and secured for all to 2040, convenient access to charging infrastructure must be retrofitted and in place by 2025. Existing initiatives and mechanisms such as OLEV grant scheme could be utilised and expanded for installations in dwellings.</p> <p>18.4 In Climate Change Committee projections, ELVs are likely to be vehicle of the future. All fleet vehicles owned and/or controlled / influenced by PSB member organisations and other public and third sector organisations (including community transport, active travel schemes, etc) should be changed for ELVs or vehicles that utilise non-fossil fuels at the next scheduled change date.</p> <p>18.5 Where fleets are larger vehicles (e.g. buses, lorries), renewable fuels such as 'green' hydrogen, biodiesel, other may be appropriate. Diversity of transport fuel is important. The public and third sector to maximise capacity building in the alternative fuels industry at every possible occasion, including the production and use of 'green' hydrogen and biofuels.</p> <p>18.6 New development provides cost effective opportunities to install ELV charging and other renewables refuelling infrastructure. The planning system should be utilised to ensure provision on all new development as soon as possible but by 2025 at the latest.</p>	Principal: PSB organisations, DNOs, Responsibility: All public and third sector organisations.	S-Research to inform policy initiatives M-L Implementation of policy
Transport	<p>For private sector businesses, and householders living in dwellings other than those owned by the public/third sector, the approach is different.</p> <p>19. Include analysis of ELV charging stations within area energy infrastructure plans and maximise opportunities for investment.</p> <p>19.1 The need for lower transport emissions, and given the UK Government among others have announced that diesel and petrol vehicles will be phased out from 2030, means that vehicle manufacturers are more vigorously increasing and marketing their range of ELV and hybrid vehicles Uptake in increasing year on year and the economics are now such that many businesses who provide vehicles for employees will be considering ELV purchases;</p> <p>19.2 Given the ELV uptake is increasing exponentially year on year, electricity grid capacity will be required to meet demand (particularly for fast charge). Local Authority area energy infrastructure plans should consider, in conjunction with DNOs, the location and requirements of ELV service stations, in addition to the potential uplift in demand from businesses as a result of on-site ELV charging.</p>	Principal: PSB Responsibility: DNO, private sector businesses, ELV charging supply chain,	S-Research the opportunity and feed into plans M-L plan implementation
	<p>For transport policy, to avoid unnecessary duplication, national initiatives should be considered prior to local interventions being developed. The 2018 report 'Re-energising Wales: Decarbonising Transport in Wales' recommended that a further report be commissioned on the decarbonising of transport in Wales to be produced by the key public bodies: this report is to be published towards the end of 2020, although investment in 'green' taxis and buses by 2028 has already been confirmed. A further recommendation of the report was to accelerate development of Regional Transport Authorities. Changes to Planning Policy Wales will make the inclusion of sustainable transport infrastructure mandatory for new development.</p> <p>20. Clarify with the Welsh Government how national plans and investment will relate to Powys, in order to better understand the gaps and how to address them.</p>	Principal: PSB, Welsh Government	S-Understand plans and integrate with PSB Strategy
	<p>The indication that the sale of diesel and petrol cars will be withdrawn by 2030, and the projections of the Climate Change Committee and the National Grid, suggest that ELVs are the transport of the future. Key to unlocking ELVs is sufficient charging infrastructure.</p> <p>21. Within its area-based energy infrastructure plan, Powys should seek to understand the demand for charging at different service station locations to identify potential electricity grid issues and analysing / discussing the implications with the Welsh Government and the DNOs.</p>	Principal: PSB, Welsh Government	S-Understand plans and integrate with PSB Strategy
Renewable Energy	<p>22. The public and third sector to maximise renewable electricity generation potential on landholdings and engage with renewable energy developers / community groups in order to bring forward projects.</p> <p>22.1 This could include wind or solar PV farms, hydro-electric projects, combined heat and power anaerobic digesters, land-fill gas projects, etc.</p> <p>22.2 The Powys REA might be re-aligned with any new identified developments outside of NDF and TAN8 sites.</p>	Principal: PSB Responsibility: Renewable energy developers, community groups, public and third sector organisations.	S – Identify and develop opportunities M-L Implement projects

	<p>For land outside of the ownership/control of public/third sector bodies, there is a key policy intervention that could facilitate the uptake of renewable electricity generation via planning policy.</p> <p>23. (PPW) Planning policy encourages the maximisation of land and resource for renewable electricity generation.</p> <p>23.1 Powys's Renewable Energy Assessment identified no appropriate sites for wind energy generation but a significant number of appropriate sites for the development of solar PV farms and other renewable electricity generating technologies: the installed capacities identified in the REA are set as targets for renewable generation by PCC. Public and third sector bodies, working with the communities in question, should work together to ensure these identified opportunities are brought forward for development;</p> <p>23.2 A potential barrier to generation in Powys is the lack of capacity on the electricity grid. Based on area infrastructure plans, the PSB should work with the DNO to form future investment plans.</p>	<p>Principal: PSB Responsibility: Renewable energy developers, community groups, public and third sector organisations, private sector landowners.</p>	S – Identify and develop opportunities M-L Implement projects
	<p>24. In line with the forthcoming National Development Framework (NDF), and working with the relevant local communities, development of larger-scale onshore wind and solar energy generators should be brought forward supported by the PSB.</p> <p>24.1 The Powys REA will need to be updated in line with the NDF once it is finalised.</p>	<p>Principal: PSB, Welsh Government</p>	S-Understand plans and integrate with PSB Strategy
	<p>In order for Powys to move closer to full decarbonisation, the amount of renewable electricity generation (and reforestation for that matter) required will vary depending upon the degree to which UK projections for electricity decarbonisation are met.</p> <p>25. PSB to monitor the progress of UK grid decarbonisation with a view to amending its decarbonisation plan accordingly.</p>	<p>Principal: PSB, Welsh Government</p>	S-Understand plans and integrate with PSB Strategy
Land Use	<p>26. In addition to the collection and provision of data in support of the development of a National Land Use Decarbonisation Strategy, the public and third sector to continue to implement currently agreed tree planting potential on all of its landholdings.</p>	<p>Principal: PSB Responsibility: Public and third sector organisations,</p>	S – Identify and develop opportunities M-L Implement projects
	<p>27. PSB to support private sector landowners to implement agreed tree-planting schemes.</p>	<p>Principal: PSB Responsibility: Community groups, public and third sector organisations, private sector landowners.</p>	S – Identify and develop opportunities M-L Implement projects
	<p>28. Implement the National Land Use Decarbonisation Strategy and identify any gaps to enable Powys to reach its overall decarbonisation goals.</p> <p>28.1 Work is being undertaken by the Welsh Government, Natural Resources Wales and other organisations in the development of a National Strategy to decarbonise the 'Land Use' and 'Agriculture' sectors. This being the case, Powys should seek to understand the role for Powys and implement accordingly.</p> <p>28.2 Powys to work with stakeholders to improve data collation and collection across the sector.</p>	<p>Principal: PSB, Welsh Government</p>	S-Understand plans and integrate with PSB Strategy
Agriculture	<p>As with 26-28, there is a link between the agriculture and land use sector via the developing National Decarbonisation Strategy. However, the following seem to be broadly accepted interventions and align with interventions in the buildings and transportation sectors:</p> <p>29. Public and third sector land and agriculture to:</p> <ul style="list-style-type: none"> a. increase in the deployment of CHP enabled anaerobic digestion, b. Investigate and implement farm-based CCS c. Increase utilisation of renewable energy/fuel for agriculture related processing and transport seem to be widely accepted measures. 	<p>Principal: PSB Responsibility: Public and third sector organisations, Renewable energy developers, agriculture supply chain</p>	S – Identify and develop opportunities M-L Implement projects
	<p>30. For private sector owned land and agriculture, the public and third sector to support the activities detailed in 29a-c.</p>	<p>Principal: PSB Responsibility: Farming and agriculture community, public and third sector organisations, private sector landowners, agriculture supply chain, Renewable energy developers.</p>	S – Identify and develop opportunities M-L Implement projects
	<p>31. As for 28.1 and 28.2.</p>	<p>Principal: PSB, Welsh Government</p>	S-Understand plans and integrate with PSB Strategy

7. Summary of Interventions

Interventions & Milestones

Direct Control

Implementation to begin by 2021:

- Introduce policies to reduce the need for employees, tenants and contractors to travel but, where transport is necessary, to incentivise the use of ELVs and/or vehicles utilising other renewable fuels;
- Maximise renewable electricity generation potential on landholdings and engage with renewable energy developers / community groups in order to bring projects forward;
- In addition to the collection and provision of data in support of the development of a National Land Use Decarbonisation Strategy, continue to implement currently agreed tree planting schemes on all landholdings;
- Investigate and deploy CHP enabled anaerobic digestion, farm-based CCS and increased utilisation of renewable energy/fuel for agriculture related processing and transport;
- All new buildings to be zero carbon.

Implementation to begin by 2025 at latest:

- For dwellings and non-domestic buildings
 - decarbonise the heating systems and reduce energy consumption by 20% against 2017 levels in existing buildings,
 - Provide access to charging and/or renewables refuelling infrastructure;
 - Fleet and contracted/subsidised vehicles to use non-fossil fuels.

Strong Influence

Implementation to begin by 2021:

- Research potential location / extent of ELV charging service stations and include findings in the area energy infrastructure plans in order to maximise the value of investment;
- Work to deliver renewable electricity projects identified in the PCC REA on private sector land;
- Support the private sector landowners to deliver potential tree-planting schemes;
- Support the private sector to investigate and deploy CHP enabled anaerobic digestion, farm-based CCS and increased utilisation of renewable energy/fuel for agriculture related processing and transport.

Implementation to begin by 2025 at latest:

- For dwellings and non-domestic buildings
 - Establish a support programme to retrofit energy efficiency measures and renewable heating systems in private sector buildings, as well as decarbonising industrial processes;
 - Introduce a planning policy preventing fossil fuel heating and industrial process use in new buildings;

National Agendas

Implementation to begin by 2021:

- Discuss with the Welsh Government plans for:
 - the unilateral requirement in Powys for requiring zero carbon / non-fossil fuelled development, and consider the potential impacts;

- requiring/stimulating uptake of renewable heating systems and associated energy efficiency measures in existing buildings, as well as decarbonising industrial processes;
- introducing requirements for zero carbon buildings and for preventing the use of fossil fuels for heating new buildings and feeding industrial processes;
- planned transport investment and initiatives in Powys;
- the forthcoming National Development Framework (NDF), and working with the relevant local communities, ensure that projects for the development of larger-scale onshore wind and solar energy generators are brought forward;
- the forthcoming National Land Use Decarbonisation Strategy, implement initiatives that apply in Powys and identify any gaps to enable Powys to reach its overall decarbonisation goals;

Limited Control

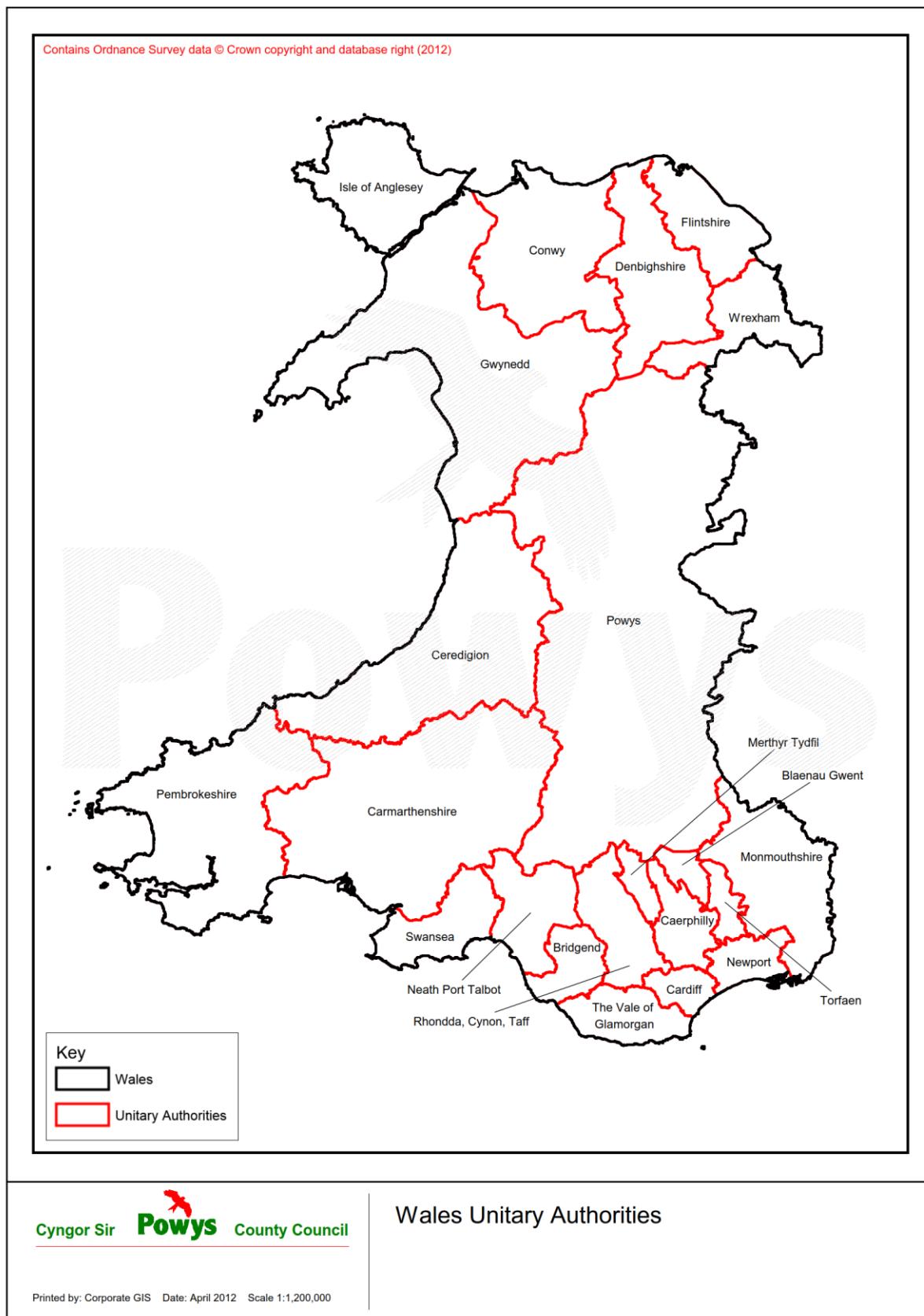
Implementation to begin by 2021:

- Undertake risk analyses where there is mid to long term uncertainty with regard to UK and Wales policy and/or regulatory frameworks, funding programmes, etc and plan accordingly;
- Liaise with the Welsh Government and the DNO to understand the position around electricity grid with regard to increases in demand from the use of Heat Pumps and EVs – feed information into area energy plans;
- The PSB to monitor the progress of UK grid decarbonisation with a view to updating its decarbonisation plan accordingly.

Next Steps

- Early discussion with the Welsh Government to understand what is required from Powys to feed into the development of national strategies but also what is being addressed (in full or in part) at a national level to assist Powys in setting the parameters for its work;
- Engagement with the Distribution Network Operator to understand current investment plans and to discuss ideas for area-based energy infrastructure plans;
- Review business payments and procurement contracts with a view to supporting transition to sustainable travel modes and vehicles;
- Undertake research of planned new development, with a view to underpinning a policy for zero carbon development. This work will also inform the area-based energy plans;
- Produce a detailed scope for the research of the area energy plans, suggestions include:
 - Details about the current building stock – location, nature and condition of plant, energy consumption and profile, source of heating fuel, etc;
 - Details of the existing energy/fuel infrastructure and any investment / upgrade plans (this should include transport re-fuelling);
 - Local renewable energy resources, generation and networks;
 - Details of retrofit works already undertaken and future work plans;
 - Ensure the analysis can split public/third/private sector works;
 - Identify public, third and private sector plans to CHP enabled anaerobic digestion, farm-based CCS and increased utilisation of renewable energy/fuel for agriculture related processing and transport, renewable electricity generation and tree-planting schemes and consider how PSB can support / integrate with its plans;
 - Review building maintenance and upgrade schedules as well as fleet replacement.

Appendix A Wales Unitary Authorities Map



Appendix B Powys Decarbonisation Strategy -Full Report

To be added upon finalisation

DRAFT

